



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,787	06/06/2006	Harald Jacobsson	3670-67	5505
23117 7590 11/16/2007 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			EXAMINER NGUYEN, HAI L	
			ART UNIT 2816	PAPER NUMBER
			MAIL DATE 11/16/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/581,787

Applicant(s)

JACOBSSON ET AL.

Examiner

Hai L. Nguyen

Art Unit

2816

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,6,8,9,12 and 13 is/are rejected.
- 7) ☒ Claim(s) 3,4,7,10,11 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 06 June 2006.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: reference numeral 500 mentioned on page 9, line 15, in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities:
page 3, line 28 through page 4, line 2; the disclosure does not match the drawings; and
page 4, line 26; the equation is incorrect.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 5, 8 and 12 are rejected under 35 U.S.C 102(b) as being anticipated by MacDonald (US 5,587,673).

With regard to claims 1 and 8, MacDonald discloses in Figs. 3 & 4 a device, and an associated method for multiplying the pulse frequency of a signal in the form of a pulse train, comprising input means for the signal (CLKIN) and a plurality of access means for accessing the signal at points with a predetermined phase difference between the points (0, .25, .50, .75, 1.00), the device additionally comprising a plurality of means (AND3, I1, AND4, I2) at a first level for combining accessed signal pairs, there being one and the same phase distance (90 degree) within all the combined pairs, the output from each first level combining means being a new pulse train, the device additionally comprising combining means (OR2) at a second level for combining the pulse trains from the first level into one single pulse train, characterized in that the combining means at the first level are such that the pulses in their output pulse trains have rise flanks which always coincide with the rise flank of the first signal in the combined accessed signal pairs, and fall flanks which always coincide with the fall flanks of the second signal in the pair.

With regard to claims 5 and 12, in which the combining means at the first level comprise logic circuits (AND3, AND4) with an AND-function.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 5, 6, 8, 9, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacDonald in view of Marbot (US 5,548,235).

With regard to claims 1 and 8, MacDonald discloses in Figs. 1-2 a device, and an associated method for multiplying the pulse frequency of a signal in the form of a pulse train, comprising input means for the signal (CLKIN) and a plurality of access means for accessing the signal at points with a predetermined phase difference between the points (0, .25, .50, .75, 1.00), the device additionally comprising a plurality of means (AND1, AND2) at a first level for combining accessed signal pairs, the output from each first level combining means being a new pulse train, the device additionally comprising combining means (OR1) at a second level for combining the pulse trains from the first level into one single pulse train, characterized in that the combining means at the first level are such that the pulses in their output pulse trains have rise flanks which always coincide with the rise flank of the first signal in the combined accessed signal pairs, and fall flanks which always coincide with the fall flanks of the second signal in the pair (see signal pairs A and C). Figs. 1-2 of MacDonald shows a device meeting all of the claimed limitations of the claimed device of the present invention, except for the limitation "there being one and the same phase distance within all the combined pairs" (such as 225° between combined pairs at 45° and 270° and at 135° and 360° in Fig. 1 of the present

Art Unit: 2816

application). Marbot teaches in Figs. 3-6 a similar device for multiplying the pulse frequency of a signal in the form of a pulse train, whereby increase a multiplication ratio of the multiplied output signal by providing more delayed signals with smaller delayed duration. Therefore, it would have been obvious to one of ordinary skill in the art to implement the teaching of Marbot into the device of MacDonald by providing more signals within the period of the input clock signal, for example providing more signals with smaller uniform delayed duration such as .125 of the period of the input clock signal instead of .25 as depicted in Fig. 4 of Marbot in order to provide the multiplied signal OUTPUT with a desired multiplying frequency. In other words, the device of Marbot is configured to provide the multiplied signal OUTPUT having a multiplication ratio equals to 2, if the device of Marbot is configured to provide the multiplied signal OUTPUT having a multiplication ratio equals to 4 or higher value, that would meet the limitation "there being one and the same phase distance within all the combined pairs". Thus the claims are rendered obvious by the references.

With regard to claims 2 and 9, the references also meet the recited limitations in the claim (see the combined pair (CLKIN and C in Fig. 2 of Marbot). Note the above discussion with regard to claim 1. For example, if the device of Marbot is configured to provide the multiplied signal OUTPUT having a multiplication ratio equals to 4 or higher value.

With regard to claims 5 and 12, in which the combining means at the first level comprise logic circuits (AND1 and would be others) with an AND-function. Note the above discussion with regard to claim 1.

With regard to claims 6 and 13, in which the combining means at the first level comprise logic circuits (OR1 and would be others) with an OR-function. Note the above discussion with regard to claim 1.

Allowable Subject Matter

7. Claims 3, 4, 7, 10, 11 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record fails to disclose or fairly suggest a device (400 in instant Fig. 4) and an associated method for multiplying the pulse frequency of a signal in the form of a pulse train, as recited in claims 3 and 10, having a very specific functional limitation such as switching means connected to the input of one or several of the combining means at the first level, using which switching means the input to said combining means can be switched to provide the combining means with another phase distance within the combined signal pair according to the formula $(360/[2*N]) + 180$, where N is the desired multiplication factor, N being any digit greater than 1, and being configured in combination with the rest of the limitations of the base claims and any intervening claims.

The prior art of record fails to disclose or fairly suggest a device (600 in instant Fig. 4) and an associated method for multiplying the pulse frequency of a signal in the form of a pulse train, as recited in claims 7 and 14, having a very specific functional limitation such as flip-flops between the output of the first level combining means (A', B', C') and the inputs of the second level combining means (E'), in order to avoid having multiple pulses, coming from the

Art Unit: 2816

combining means at the first level during the two periods of the input signal, and being configured in combination with the rest of the limitations of the base claims and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. For example, Kim (US 5,530,387) is cited as of interest because it discloses a frequency multiplier circuit.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai L. Nguyen whose telephone number is 571-272-1747 and Right Fax number is 571-273-1747. The examiner can normally be reached on Monday-Thursday.

10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Richards can be reached on 571-272-1736. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2816

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Hai L. Nguyen
Patent Examiner
November 12, 2007